REMARKS

In the Office Action of October 17, 2006, claims 1-20 were rejected under 35 U.S.C. § 103(a) as being unpatentable by U.S. Patent No. 6,546,090 (hereinafter, Bremer), in view of U.S. Patent No. 6,262,994 (hereinafter, Dirschedl), and in further view of U.S. Patent No. 6,549,520 (hereinafter, Gross). Claim 1 includes steps of "obtaining a data rate during initialization" and "comparing the data rate to a threshold." On page 3 of the Office Action, the Examiner asserts that Dirschedl teaches obtaining information regarding the data rate during initialization at col. 2, line 63 – col. 3, line 9, which talks about determining an error rate. Applicant strongly disagrees with this assertion and submits that an error rate does not constitute information regarding the data rate. But more importantly, this point is moot because claim 1 no longer refers to "obtaining information regarding a data rate," but rather refers simply to "obtaining a data rate."

On page 4 (2nd paragraph) of the Office Action, the Examiner acknowledges that Dirschedl does not teach "obtaining a data rate," but goes on to make the incredibly strained argument that an error rate is the known functional equivalent to a data rate. Applicant wholly disagrees with this assertion. In transmission systems, error rate indicates the number of erroneous bits per number of bits transmitted, whereas data rate indicates the number of bits transmitted in a given time. These are in no way functionally equivalent. To support his argument that an error rate is the known functional equivalent to a data rate, the Examiner cites col. 4, lines 29-33, of Gross, which reads, "Preferably, this is the maximum data rate that can be provided for the particular communications subchannel, subject to predefined constraints such as maximum bit error rate, maximum signal power, etc. that may be imposed by other considerations." Applicant submits that the cited excerpt from Gross in no way supports the Examiner's contention that an error rate is the known functional equivalent to a data rate. At best, this excerpt from Gross is saying that an error rate can have an effect on the maximum data rate that can be achieved in a system, and that is certainly not equivalent to saying that a data rate and an error rate are equivalent, as stated by the Examiner. The Examiner further contends that col. 4, lines 29-33, of Gross suggest "to substitute information regarding a data rate (i.e. error rate) with a data rate." To the extent that this assertion makes any sense, the assertion is patently false and a gross mischaracterization of the cited excerpt from Gross. The Examiner further

supports his argument by alleging a parallel between error rate and maximum receive data rate. However, claim 1 does not refer to a "maximum receive data rate," but instead simply to the "data rate."

On page 2 of the Office Action, in the "Response to Arguments" section, the Examiner takes note of the fact that Applicant conceded that "an error rate can have an effect on the maximum data rate that can be achieved in a system." The Examiner then extrapolates this statement and concludes that a data rate and an error rate are "art recognized functional equivalents." This conclusion is fundamentally false and is the product of flawed logic. The proposition that an error rate can have an effect on the maximum data rate that can be achieved in a system in no way means that a data rate and an error rate are functionally equivalent.

The Examiner supports his conclusion that an error rate is the functional equivalent of a data rate by stating, "when an error rate is determined, an amount of data is also determined, and it is obvious to one having skill in the art to utilize the amount of data in various methods as applied below." First of all, while it may be true that "when an error rate is determined, an amount of data is also determined," it is *not* true that when an error rate is determined, a data *rate* is also determined. This is because an error rate can be defined as "the ratio of the number of incorrect elements transmitted to the total number of elements transmitted," while a data rate can be defined as "the rate at which a channel carries data, measured in bits per second," (See, e.g., *Newton's Telecom Dictionary, 21st Edition*, 2005, page 236 and page 314). So "data rate" is a measurement per unit time, while error rate can simply be the ratio of erroneous bits to correct bits, without regard to the time domain. Furthermore, even if it were true that when an error rate is determined, a data rate is also determined (which it is not), it would not follow that obtaining an error rate and making certain decisions based thereon is equivalent to obtaining a data rate and making certain decisions based thereon. Because neither Dirschedl nor Gross teach or suggest obtaining a data rate during initialization and comparing the data rate to a threshold, Applicant submits that claim 1 is allowable over the cited art.

The last two clauses of claim 1 are amended herewith to clarify what is being claimed. Applicant submits that the changes do not alter the substance of the claim and do not necessitate further search. The last two clauses as amended are directed to "forming symbols using a

multiple of a predetermined number of bits per symbol if the data rate is above the threshold; and allowing symbols to be formed using any integer number of bits per symbol if the data rate is below the threshold." Applicant submits that the cited art does not disclose these limitations. On page 3 of the Office Action, the Examiner asserts that Dirschedl teaches "transmitting symbols using one of a multiple of 8, 4 or 2 bits per symbol if the information is above the threshold (col. 2, line 45); and transmitting symbols using an integer number of bits per symbol if the information is below the threshold (col. 2, line 45)." Applicant submits that this assertion is not accurate. Col. 2, line 45, of Dirschedl refers to using different types of modulation, namely 2PSK (binary phase-shift keying), 4PSK (quadrature phase-shift keying) or 8PSK (8-phase phase-shift keying). In the PSK nomenclature, the number in front of the "PSK" refers to the number of phases employed in the phase-shift keying modulation scheme. It does not refer to the number of bits employed per symbol.

Dirschedl also talks about determining the packet size based upon the error rate determination (col. 2, line 63 - col. 3, line 9). Applicant points out that determining packet size and determining symbol size are unrelated endeavors. Applicant submits that Dirschedl does not teach or suggest "forming symbols using a multiple of a predetermined number of bits per symbol if the data rate is above the threshold; and allowing symbols to be formed using any integer number of bits per symbol if the data rate is below the threshold" per claim 1.

Claim 1 also specifies that the data rate upon which the operations of the claim are based is obtained during initialization. This is yet another limitation that distinguishes claim 1 over the methods of Dirschedl. Dirschedl nowhere refers to performing its methods during the initialization stage. All indications are that the methods are Dirschedl are performed dynamically during normal operation of the device. Col. 3, lines 9-12, of Dirschedl states, "Given the setup of the connection, averages of the setting variables, which can be selected, are first set, for example, to a medium size of packet, the type of modulation 8PSK, a FEC code arte of ½, and the highest transmitter power." Thus the variables in Dirschedl are initially set at predetermined values, rather than determined based on the error rate determination. The paragraph at col. 3, lines 13-25, indicates that after these initial settings are set at the predetermined values, the variables are adjusted automatically based on the error rate

determination during normal operation of the device. This is yet another aspect of claim 1 that distinguishes over the cited art.

For at least the above reasons, Applicant submits that claim 1, and claims 2-6 depending therefrom, are allowable over the cited art.

Claim 7 includes limitations similar to those included in claim 1. Applicant submits that claim 7, and claims 8-12 depending therefrom, are allowable over the cited art for the reasons set forth above with respect to claim 1.

Claim 13 is amended herewith to clarify what is being claimed. Applicant submits that the changes do not alter the substance of the claim and do not necessitate further search. Claim 13 as amended is directed to:

> 13. An ADSL modem system comprising:
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> a first modem having a first transmitter and a first receiver; and
>
> a second modem having a second transmitter and a second receiver, the second modem operable to estimate a maximum receive data rate of the second modem and compare it to a threshold, the second transmitter transmitting a message to the first receiver that instructs the first transmitter to transmit data using a pre-selected number of bits per symbol if the maximum receive data rate is above the threshold, the second transmitter transmitting a message to the first receiver that instructs the first transmitter that it is free to transmit data using any integer number of bits per symbol if the maximum receive data rate is above the threshold.

The Examiner acknowledges on page 7 of the Office Action that Bremer in view of Dirschedl fails to teach a modem that estimates a maximum receive data rate per claim 13. The Examiner argues Dirschedl teaches a modem that estimates an error rate and argues that an error rate is an art accepted equivalent to a maximum achievable data rate, citing the excerpt of Gross as applied to claim 1 above. Applicant disputes the Examiner's assertion that an error rate is an art accepted equivalent to a maximum receive data rate. To support his argument, the Examiner cites col. 4, lines 29-33, of Gross, which reads, "Preferably, this is the maximum data rate that can be provided for the particular communications subchannel, subject to predefined constraints such as maximum bit error rate, maximum signal power, etc. that may be imposed by other

considerations." Applicant submits that the cited excerpt from Gross in no way supports the Examiner's contention that an error rate is the known functional equivalent to a maximum receive data rate. At best, this excerpt from Gross is saying that an error rate can have an effect on the maximum data rate that can be achieved in a system, and that is certainly not equivalent to saying that a maximum receive data rate and an error rate are equivalent. On page 4 of the Office Action, the Examiner further contends that col. 4, lines 29-33, of Gross suggest "to substitute information regarding a data rate (i.e. error rate) with a data rate." To the extent that this assertion makes any sense, the assertion is patently false and a gross mischaracterization of the cited excerpt from Gross.

On page 2 of the Office Action, in the "Response to Arguments" section, the Examiner takes note of the fact that Applicant conceded that "an error rate can have an effect on the maximum data rate that can be achieved in a system." The Examiner then extrapolates this statement and concludes that a maximum receive data rate and an error rate are "art recognized functional equivalents." This conclusion is fundamentally false and is the product of flawed logic. The proposition that an error rate can have an effect on the maximum data rate that can be achieved in a system in no way means that a maximum receive data rate and an error rate are functionally equivalent.

Claim 13 as amended also includes "the second transmitter transmitting a message to the first receiver that instructs the first transmitter to transmit data using a pre-selected number of bits per symbol if the maximum receive data rate is above the threshold, the second transmitter transmitting a message to the first receiver that instructs the first transmitter that it is free to transmit data using any integer number of bits per symbol if the maximum receive data rate is above the threshold." Applicant submits that this aspect of claim 1 is not taught or suggested by the cited art. On page 6 of the Office action, the Examiner asserts regarding Dirschedl, "According to the success/fail determination, the number of bits per symbol is updated according to the possible bit rates of 2, 4, or 8 bits per symbol at the transmitter." Applicant submits that this assertion is not accurate. The Examiner appears to be referring to col. 2, line 45, of Dirschedl, which refers to using different types of modulation, namely 2PSK (binary phase-shift keying), 4PSK (quadrature phase-shift keying) or 8PSK (8-phase phase-shift keying). In the

PSK nomenclature, the number in front of the "PSK" refers to the number of phases employed in the phase-shift keying modulation scheme. It does not refer to the number of bits employed per symbol.

Dirschedl also talks about determining the packet size based upon the error rate determination (col. 2, line 63 - col. 3, line 9). Applicant points out that determining packet size and determining symbol size are unrelated endeavors. Applicant submits that Dirschedl does not teach or suggest "the second transmitter transmitting a message to the first receiver that instructs the first transmitter to transmit data using a pre-selected number of bits per symbol if the maximum receive data rate is above the threshold, the second transmitter transmitting a message to the first receiver that instructs the first transmitter that it is free to transmit data using any integer number of bits per symbol if the maximum receive data rate is above the threshold" per claim 13.

For at least the above reasons, Applicant submits that claim 13, and claims 14-20 depending therefrom, are allowable over the cited art.

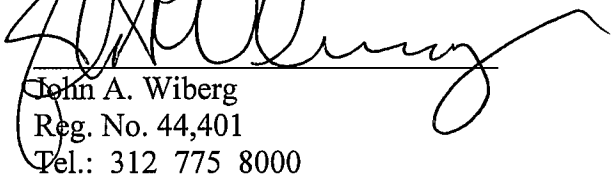
In view of the foregoing, Applicant respectfully requests allowance of claims 1-20.

The Commissioner is hereby authorized to charge any additional fees or credit any overpayment to the deposit account of McAndrews, Held & Malloy, Account No. 13-0017.

Respectfully submitted,

Date: December 14, 2006

MCANDREWS, HELD & MALLOY, LTD.



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